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Using artificial intelligence in language learning

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Abstract: Artificial intelligence is increasingly important in our daily lives. One particular application of it is to improve education in the broadest sense, including the popular study of foreign languages. AI-supported software helps the user acquire knowledge in a more accessible way.

The purpose of the article is to identify the degree of use of artificial intelligence in the process of learning foreign languages by Poles born after 1995. In order to gain information, a diagnostic survey was conducted using a survey questionnaire. The survey was conducted in April 2024 on a sample of 100 respondents born after 1995. The survey made it possible to determine the degree of use of artificial intelligence in language learning processes by respondents.

Keywords: artificial intelligence, language learning, new technologies

1. Introduction

The first attempts to introduce digital technology into language teaching (NJO) took place in the 1950s. They gave rise to a new field - CALL (Computer Assisted Language Learning). From the beginning, it was interdisciplinary in nature as a joint part of language teaching methodology, psychology, pedagogy, linguistics and digital engineering.

The dynamic changes taking place in our society, related to the development of technology and the possibility of rapid transmission of information, also entail changes in the educational field, and consequently

there is also a need to adapt the educational system to new circumstances and requirements[1]. An element worth noting is the recently popular artificial intelligence (AI, or Artificial Intelligence). It is with us practically every day. It finds its application in a wide range of programs, so it is not difficult to find software on our smartphones whose operation is supported by it.

Technology appears in virtually every sphere of human life, not excluding education, both at the primary level and in higher education. Thanks to constant access to the Internet and the presence of information and communication technologies (ICT), we are able to facilitate both work and the acquisition of new skills - of course, with appropriate use of the available tools[2].

Wilczynska argues that "the use of new technologies to enrich the workshop seems to be directly related to the teacher's autonomy attitudes"[3]. This is also confirmed in Zawadzka's (2004) research - low levels of perceived autonomy are associated with low conviction to use ICTs[4].

It is aptly defined by K. Różanowski, stating that artificial intelligence is a branch of computer science that deals with the creation of machines and algorithms that exhibit characteristics of intelligence. It is understood as the ability to adapt to changing conditions, make complex decisions, learn, reason abstractly, etc. Artificial intelligence studies and defines the principles that guide intelligent human behavior, and then uses them in algorithms and computer programs that are able to apply these principles. Examples of such solutions include text, image and sound recognition programs, translators, proof of logical and mathematical theorems, machine learning and simulation games[5].

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[1] M. Schulz, E-Learning as a Development Tool, Sustainability, 2023, p. 1.

[2] E. Marín-Campos, Uso de herramientas tecnológicas en educación: Estudio de revisión, Digital Publisher CEIT, nr 8(1), 2022, pp. 39-51.

[3] W. Wilczyńska, Uczyć się czy być nauczanym? O autonomii w przyswajaniu języka obcego. Warszawa/Poznań, 1999.

[4] J. Krajka, S. Maciaszczyk, *Kształtowanie świadomości nauczycieli w dyskursie internetowym – media społecznościowe w nauczaniu języków obcych*, Neofilolog, 38(2), 2012, pp. 243-261.

[5] K. Różanowski, *Sztuczna inteligencja: rozwój, szanse i zagrożenia,* Zeszyty Naukowe Warszawskiej Wyższej Szkoły Informatyki, nr 2, 2007, pp. 109-135.

Since artificial intelligence began to be analyzed, there have been gradual efforts towards its application in education. The manifestation of these efforts includes research into artificial cognitive systems, electronic information processing devices and technologies that support natural cognitive processes, which are the subject of cognitive science research. Modern technologies are playing an increasingly important role in people's daily lives. This technological revolution is also affecting the sphere of education, with particular emphasis on language learning[6]. Language learning using artificial intelligence is an ideal example of the use of new technology in education.

Modern technologies based on artificial intelligence are playing an increasingly important role in language learning. Artificial intelligence can adapt to a student's individual needs, providing personalized education. Artificial intelligence algorithms can also track a student's progress, identify his or her strengths and weaknesses, and provide tailored materials.

Artificial intelligence can also provide direct support to the student, in a way replacing the teacher in its actions. It can act as an interactive tutor, helping students understand the material, answering questions and providing additional exercises tailored to the student's level of knowledge. This form of tutoring can be available to students around the clock, allowing for flexible use of learning. Artificial intelligence can serve as a simulator for developing soft skills, such as interpersonal skills, emotion management and problem solving. Advanced language translation systems based on artificial intelligence can facilitate language learning for students. With the help of apps and tools, students can translate texts into different languages, enhancing their language learning. In the era of digital society, the Internet and communication and information technology seem irreplaceable when searching for information.

AI can excel at translating text. Artificial intelligence is becoming more and more effective in analyzing and translating texts, which has an impact on educational processes and assessing language competence. Thanks to

[6] B. Grobelna, *Sztuczna inteligencja w nauczaniu języka angielskiego. ChatGPT jako narzędzie wspomagające oraz inteligentna pomoc w edukacji językowej*, Ocenianie i kontrola postępów ucznia, nr 3, 2021, pp. 87-93.

modern applications and devices, many people now have no difficulty understanding text in a foreign language[7].

With the further development of AI technology, even more innovations can be expected in the field of language education. The impact of AI on the language learning process is promising for both students and teachers, opening up new possibilities in the formation of competencies.

Artificial intelligence has the potential to become a fundamental component of education, but its implementation requires the right approach. Only then will it be possible to exploit its functionality with relatively low risks associated with it.

A popular tool for language learning supported by artificial intelligence is the Duolingo application. It helps modify course content according to the students' level of progress.

The app provides personalized lessons, vocabulary exercises and interactive tests to support language learners to achieve proficiency in the language. Artificial intelligence helps learners with special difficulties by providing speech recognition, feedback on pronunciation and creating interesting materials according to their levels and comprehension[8]. In a word, the artificial intelligence implemented in the app helps users achieve better learning results. As of 2023, the Duolingo app uses the new GPT-4 model to provide users with new features such as "Role Play" or "Explain my answer." With "Role Play," users can practice real-life conversational skills with fictional characters. "Explain My Answer" offers students the opportunity to receive an explanation of why their answer was right or wrong. In addition, they can ask for further explanations or examples[9]. GPT-4 is available in the Duolingo Max plan, but its availability to users is quite limited at the moment.

Translators can be useful in language learning. Many of them use artificial intelligence technology to produce their translations.

One of the translation sites based on artificial intelligence is DeepL (www.deepl.com). DeepL uses deep learning technology based on neural

[7] B. Brzoza, *Technologie w nauczaniu? Niedoskonałe, ale przyzwoicie wiarygodne!, Ocenianie i kontrola postępów ucznia*, nr 3, 2021, p. 133.

[8] U. Ismail, *Artificial intelligence (AI) in education*, Education Next, 2024, p. 3.

[9] *Unlocking the Power of Generative AI Models and Systems such as GPT-4 and ChatGPT for Higher Education. A Guide for Students and Lecturers*, 2023, p. 21.

networks. These networks are not recursive, but convolutional, meaning that DeepL processes words, phrases and statements in synchronous threads similar to the image processing procedures of[10].

Another program is the well-known Google Translator. Initially it translated texts phrase by phrase, but since 2016 it has relied on machine learning to improve the quality of translations. The system constantly learns from new texts entered for translation, including single words, word pairs and entire sentences[11].

AI chatbots, such as ChatGPT, can also help in language learning. It has a number of functionalities that can be successfully applied to language learning[12]. It is built using a deep learning architecture called Transformer, which allows it to master language patterns and generate coherent human-like texts, as well as solve a number of other tasks[13]. For now, the use of ChatGPT in language teaching is mainly written about in studies of a theoretical nature, which aim to demonstrate the capabilities of new digital tools, analyze the prospects of their use, as well as the difficulties that teachers and students working with them may encounter[14]. By chatting we can successfully receive answers to our questions - including those in the field of foreign languages. Translating, checking our skills or having conversations in a foreign language are just a few examples of activities that ChatGPT can afford. The latest language model on which it is based is GPT-4. The same language model is currently used in the Duolingo application[15].

[10] T. Schmidt, T. Strasser, *Anglistik: International Journal of English Studies*, 33(1), 2022, pp. 165-184.

[11] J. Fazlagić, Sztuczna inteligencja (AI) jako megatrend kształtujący edukację. Jak przygotować się na szanse i wyzwania społeczno-gospodarcze związane ze sztuczną inteligencją?, Instytut Badań Edukacyjnych, Warszawa 2022, p. 88.

[12] J. Cholwea, Z. Rak, *ChatGPT jako przyjaciel pokolenia Z*, Języki obce w szkole, 2023, 4, p. 29.

[13] A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A.N. Gomez, Ł. Kaiser, I. Polosukhin, *Attention is all you need*, [w:] arXiv:1706.03762.

[14] M.S.S. Moqbel, A.M.T. Al-Kadi, Foreign Language Learning Assessment in the Age of ChatGPT: A Theoretical Account, Journal of English Studies in Arabia Felix, nr 2(1), 2023, pp. 71-84.

[15] A. Lampart, Rozwiązania generatywnej sztucznej inteligencji – zagrożenia i aspekty prawne, Polska Agencja Rozwoju Przedsiębiorczości, Warszawa 2023, p. 11.

An extremely important aspect in language learning is proper pronunciation. Neglecting this aspect, even being well-prepared in terms of theory, we can experience problems during conversation. Thanks to artificial intelligence, students can train the correct pronunciation of words. This technology is used by, for example, the Duolingo platform, to analyze students' utterances and provide accurate assessments of pronunciation and intonation[16].

By learning correct pronunciation, students can become more confident in their ability to communicate in a foreign language and are more likely to engage in conversations with native speakers. What's more, speech recognition technology can help students improve their listening and comprehension skills. Students can use speech recognition software to listen to recordings of native speakers, and the software can identify any errors in their pronunciation. This allows students to hear the correct pronunciation and intonation of words and phrases, and thus better understand the language. Speech recognition technology also provides students with the opportunity to practice their oral expression skills using course materials and oral practice[17].

2. Research methods

The purpose of the survey was to test the degree of use of artificial intelligence in language learning. Hypotheses were adopted assuming that half of the respondents, while learning foreign languages, use programs using artificial intelligence, and that half of the respondents consider the use of artificial intelligence in language learning processes as a good solution.

The study used a quantitative research method, which is the diagnostic survey method. A survey questionnaire was used as a research tool. The survey was conducted on 100 respondents born after 1995. 74% of the respondents were women, while 26% were men. A Google form was used to collect the results of the survey.

[16] C. Suman, S. Suman, Using Artificial Intelligence for Foreign Language Learning, Talent Publication, 2023, Issue: 1, Volume: 1, p. 59.

[17] M. Liu, Exploring the Application of Artificial Intelligence in Foreign Language Teaching: Challenges and Future Development, SHS Web of Conferences, 168, 03025, 2023.

3. Results

Among the respondents, respondents with secondary/vocational education accounted for the largest percentage of respondents - 64%, and higher education - 32%. Respondents with primary education accounted for only 4% of respondents.

Respondents mainly resided in villages - 47% - and the largest cities, over 150 thousand residents - 26%. Small cities (up to 50 thousand residents) were the place of residence for 15% of respondents, and medium-sized cities (50 to 150 thousand residents) were inhabited by 12% of respondents.

The survey results show that 72% of respondents regularly use AI-based technologies to support their learning of any topics, while 28% of respondents do not use such tools (Figure 1).

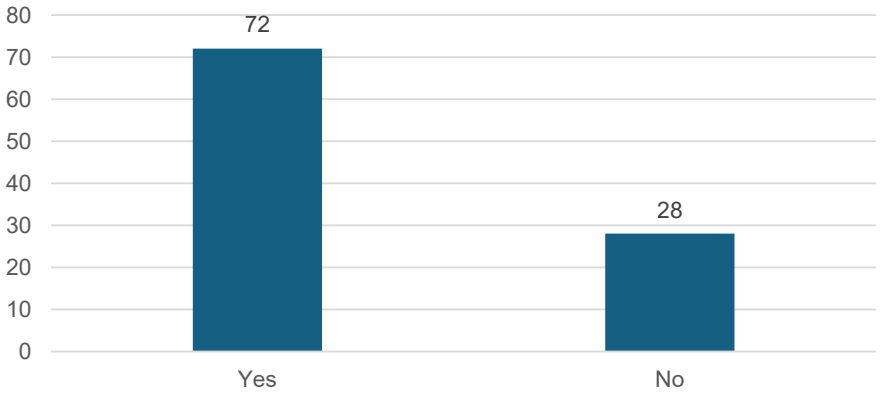

Chart 1. Use of artificial intelligence during learning

Source: own study.

The vast majority of respondents (93%) saw the future in using artificial intelligence to teach any subject. Only 7% of respondents expressed the opposite view (Chart 2).

Almost all respondents believed that artificial intelligence has a positive impact on language learning - 80%. This information indicates a high degree of acceptance of modern technologies in the educational

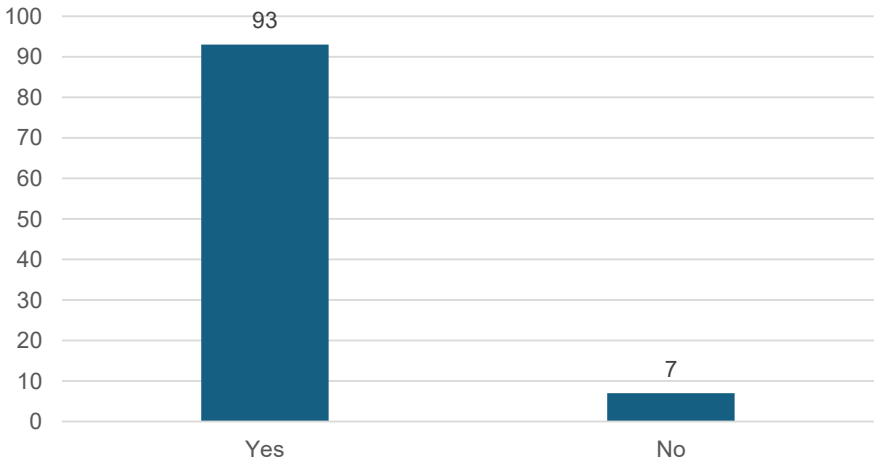

Chart 2. The future of using artificial intelligence in science

Source: own study.

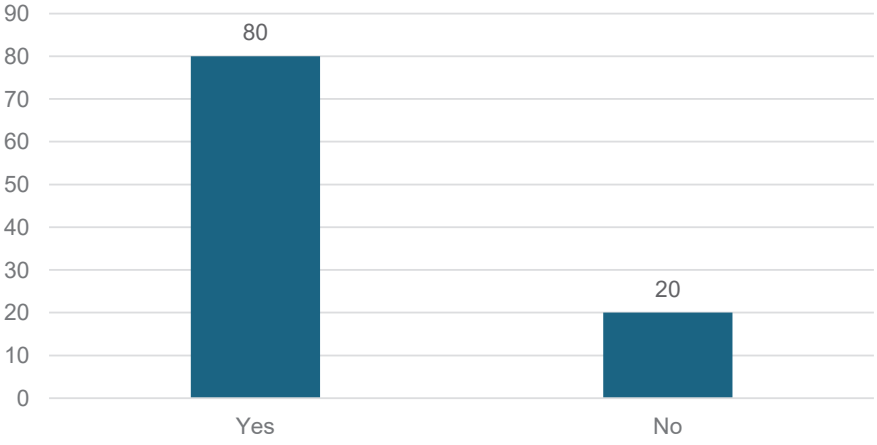

Chart 3. Positive impact of artificial intelligence on language learning

Source: own study.

process. Those who disagreed with this statement accounted for 20% of respondents (Figure 3).

The majority of respondents (80%) were of the opinion that artificial intelligence can significantly help in learning the correct pronunciation of words in foreign languages. 20% of respondents had the opposite opinion (Chart 4).

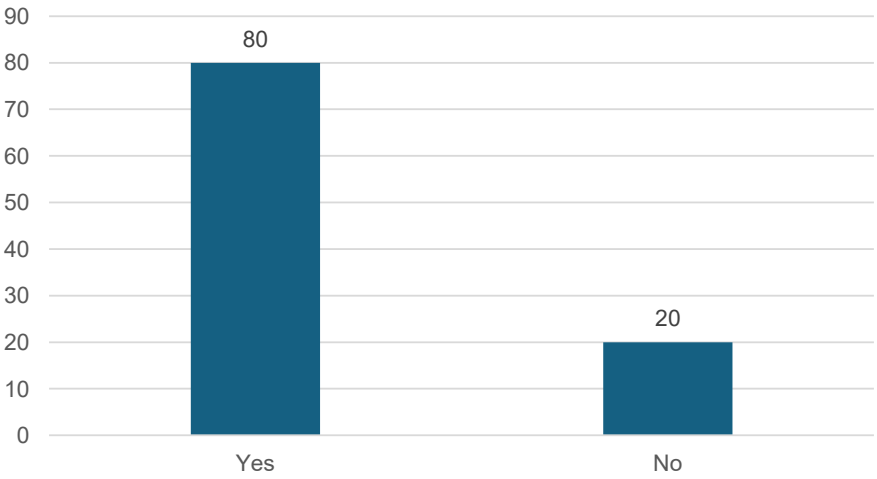

Chart 4. Learning correct pronunciation in foreign languages using artificial intelligence

Source: own study.

The vast majority of respondents (60%) believed that programs based on artificial intelligence were more effective than traditional language teaching methods. 40% of respondents preferred conventional education methods (Chart 5).

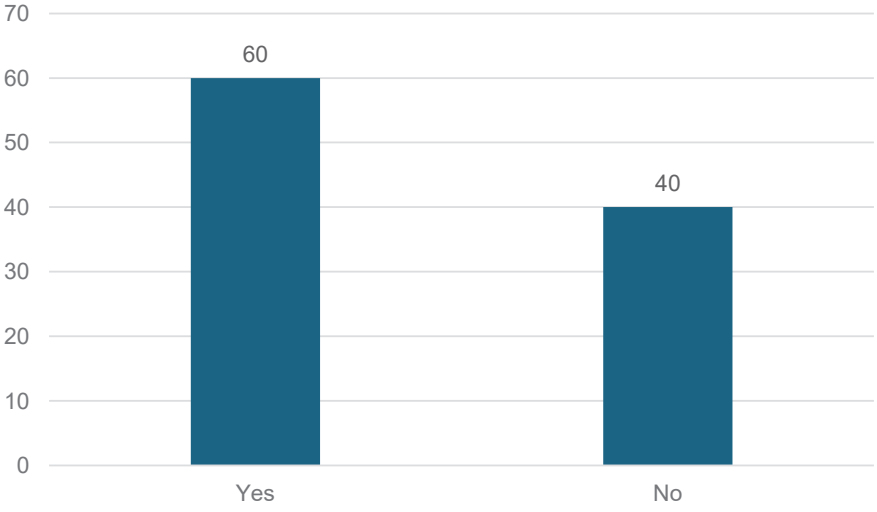

Chart 5. Use of artificial intelligence-based programs and their effectiveness against conventional solutions

Source: own study.

In terms of preferences for language teaching methods, 56% of respondents preferred a combination of traditional methods and artificial intelligence-based programs. Traditional methods were preferred by 26% of respondents, while 9% of respondents preferred artificial intelligence-based programs. The remaining 9% of respondents did not learn foreign languages (Chart 6).

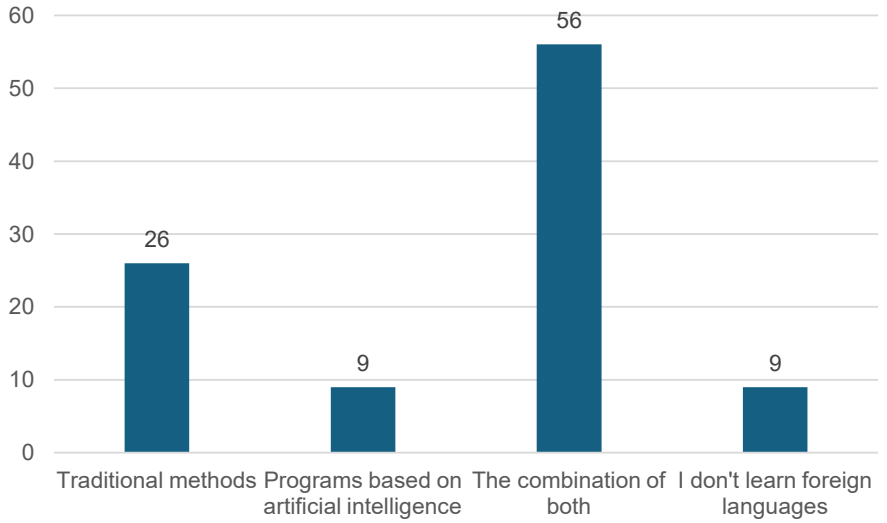

Chart 6. Preferences on how to learn foreign languages

Source: own study.

The data shows that 39% of respondents used chatbots when learning foreign languages, 54% of respondents did not use such tools, and 7% of respondents did not learn foreign languages (Chart 7).

The most commonly used AI-based translators by respondents were Google Translator (76%), Deepl (16%), Reverso Contex (2%), and other translators (5%). Only 1% of respondents did not use any translator (Chart 8).

The analysis showed that 8% of respondents used such programs daily, 24% of respondents several times a week, 13% of respondents once a week, 42% of respondents less than once a week, and 13% of respondents did not use AI programs at all during language learning (Chart 9).

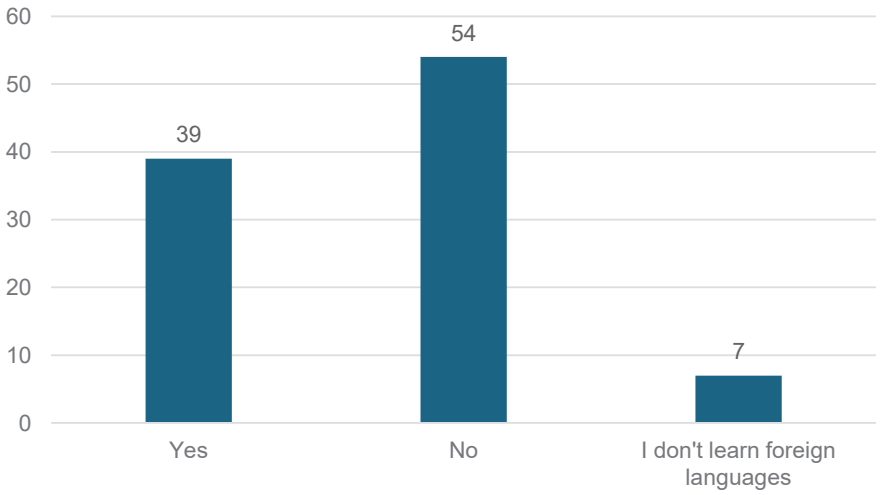

Chart 7. use of chatbots while learning languages

Source: own study.

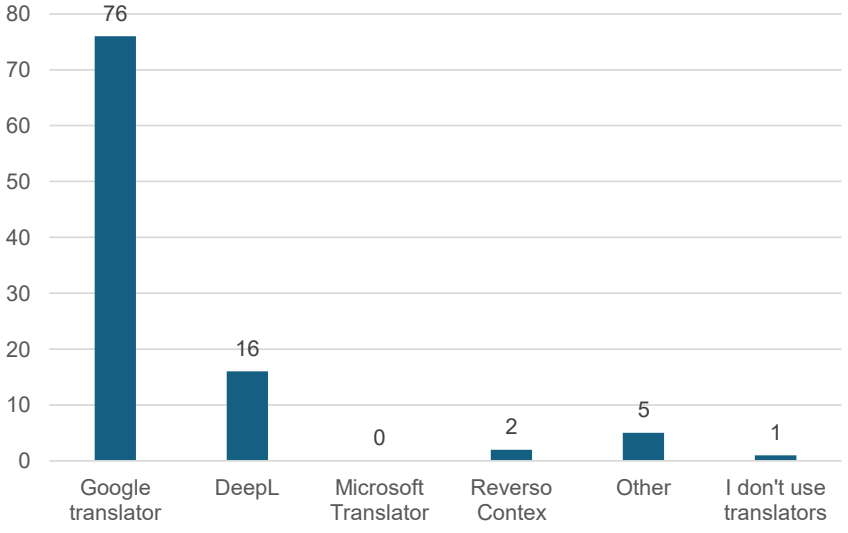

Chart 8. use of artificial intelligence-based translators

Source: own study.

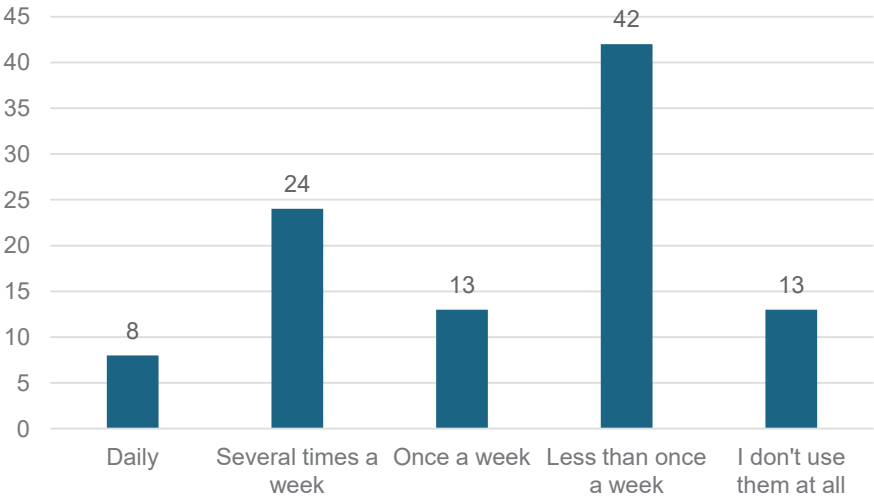

Chart 9. Frequency of use of AI programs in language learning

Source: own study.

The survey found that 80% of respondents said that artificial intelligence has a positive impact on language learning. 59% of respondents with this opinion were women, and 21% were men. Only 20% of respondents had a different opinion - 15% of women and 5% of men of the total

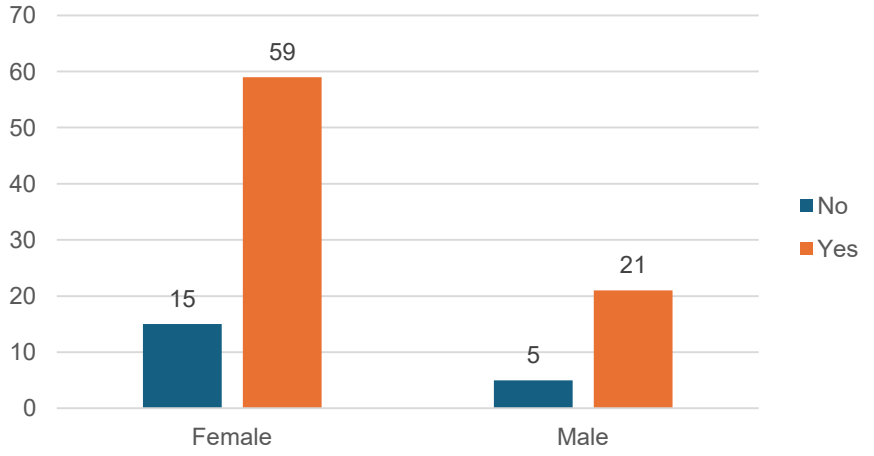

Chart 10. Gender of respondents juxtaposed with opinion that artificial intelligence has a positive impact on language learning

Source: own study.

respondents. Considering the results, it can be concluded that regardless of gender, artificial intelligence has a good opinion in terms of its impact on language learning (Chart 10).

4. Conclusion

The majority of respondents use artificial intelligence when learning foreign languages, and believe that artificial intelligence is a good solution in the context of language learning. This is evidenced by the fact that the vast majority of respondents believed that artificial intelligence has a positive impact on language learning, and said that artificial intelligence is able to help learn the correct pronunciation of words in foreign languages; more than half of respondents said that using artificial intelligence-based programs is a more effective method of learning foreign languages, compared to conventional solutions; almost half of respondents used chatbots when learning foreign languages, and almost all respondents used artificial intelligence-based translators. The results obtained are higher than those assumed in the hypotheses, making the hypotheses unconfirmed.

It should be noted that the people surveyed were those born after 1995. Given this, it can be suspected that the popularity of using artificial intelligence in this aspect is so popular due to the attitude of young people towards new technologies.

Knowledge of foreign languages is even desirable in the labor market. Young people may motivate the use of modern methods of language learning precisely by the desire to broaden their competence in order to become more competitive in the labor market, and the possibility of personalizing lessons and taking them virtually anywhere may make them attractive to them.

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WYKORZYSTYWANIE SZTUCZNEJ INTELIGENCJI W NAUCE JĘZYKÓW OBCYCH

Streszczenie: Sztuczna inteligencja ma coraz większe znaczenie w naszym codziennym życiu. Szczególnym jej zastosowaniem jest usprawnienie szeroko pojętej edukacji, w tym cieszącą się popularnością nauką języków obcych. Oprogramowanie wspierane SI pomaga użytkownikowi zdobywać wiedzę w przystępniejszy sposób.

Celem opracowania jest identyfikacja stopnia wykorzystywania sztucznej inteligencji w procesach nauki języków obcych przez Polaków urodzonych po roku 1995. W celu zdobycia informacji został przeprowadzony sondaż diagnostyczny przy użyciu kwestionariusza ankiety. Badanie przeprowadzono w kwietniu 2024 roku na próbie 100 respondentów urodzonych po 1995 roku. Przeprowadzone badanie pozwoliło na określenie stopnia wykorzystywania sztucznej inteligencji w procesach nauki języków obcych przez respondentów.

Słowa kluczowe: sztuczna inteligencja, nauka języków obcych, nowe technologie